

Claims

1. (Previously presented) A multilayer film or sheet comprising:

a.) a first co-extruded polymeric layer consisting essentially of an ionomer and a first additive; and

5 b.) a second co-extruded polymeric layer consisting of an ionomer and a second additive;

wherein the film or sheet is a thermoformable film or sheet having a distinctness of image of at least 60; the first co-extruded polymeric layer is surface layer; the second co-extruded layer is in contact with said first co-extruded polymeric layer; and the first or second 10 additive is one or more UV stabilizer, UV absorber, antioxidant, thermal stabilizer, anti-stat additive, processing aid, fiber glass, mineral filler, anti-slip agent, plasticizer, nucleating agent, pigment, dye, flake, or mixtures thereof.

2. (Canceled)

3. (Previously presented) A multilayer film or sheet of Claim 1 wherein the film has a 15 thickness of from about 8 to about 60 mils; said ionomer consists essentially of a copolymer derived from ethylene and α , β -ethenically unsaturated C₃ to C₈ carboxylic acid; and said copolymer is partially neutralized with metal ions.

4. (Withdrawn) A multilayer film or sheet of Claim 1 wherein said ionomer-polyamide blend consists essentially of one or more polyamide which forms a continuous phase or co- 20 continuous phase with one or more ionomer dispersed therein, said ionomer is present in the range from 60 to 40 weight percent and said polyamide is present in the range from 40 to 60 weight percent based on the total weight of ionomer and polyamide, said ionomer consisting essentially of a copolymer derived from ethylene and α , β -ethenically unsaturated C₃ to C₈ carboxylic acid wherein said copolymer is partially neutralized with 25 metal ions; wherein the average acid content of copolymer prior to neutralization is present in a sufficiently high percentage such that neutralization in the range of 55 to 100 mole percent of the acid present at melt temperature with one or more metal cations increases the viscosity of the ionomer above that of the polyamide.

5. (Canceled)

30 6. (Previously presented) A multilayer film or sheet of Claim 1 wherein said first co-extruded polymeric layer is clear and said second co-extruded polymeric layer comprises the polymer and an additive selected from pigment, dye, flake, or mixtures thereof.

7. (Withdrawn) A multilayer film or sheet comprising:

a.) a first co-extruded polymeric layer consisting essentially of ionomer;
b.) a second co-extruded polymeric layer consisting essentially of very low density polyethylene in contact with said first co-extruded polymeric layer, wherein at least one of said first or second co-extruded polymeric layers contain pigments, dyes, flakes, or mixtures thereof; and

5 c.) at least one additional third co-extruded polymeric layer in contact with said second co-extruded polymeric layer.

8. (Canceled)

9. (Withdrawn) A multilayer film or sheet of Claim 7 wherein said ionomer consisting 10 essentially of a copolymer derived from ethylene and α , β -ethenically unsaturated C₃ to C₈ carboxylic acid wherein said copolymer is partially neutralized with metal ions.

10. (Canceled)

11. (Withdrawn) A multilayer film or sheet of Claim 7 wherein said first co-extruded polymeric layer is clear and said second co-extruded polymeric layer contains pigments, 15 dyes, flakes, or mixtures thereof.

12. (Withdrawn) A multilayer film or sheet comprising:

a.) a first co-extruded polymeric layer consisting essentially of ionomer;
b.) a second co-extruded polymeric sheet layer consisting essentially of ethylene polar copolymer in contact with said first co-extruded polymeric layer, wherein at least 20 one of said first or second co-extruded polymeric layers contain pigments, dyes, flakes, or mixtures thereof; and

c.) at least one additional third co-extruded polymeric layer in contact with said second co-extruded polymeric layer.

13. (Canceled)

25 14. (Withdrawn) A multilayer film or sheet of Claim 12 wherein said ionomer consisting essentially of a copolymer derived from ethylene and α , β -ethenically unsaturated C₃ to C₈ carboxylic acid wherein said copolymer is partially neutralized with metal ions.

15. (Canceled)

30 16. (Withdrawn) A multilayer film or sheet of Claim 12 wherein said first co-extruded polymeric layer is clear and said second co-extruded polymeric layer contains pigments, dyes, flakes, or mixtures thereof.

17. (Withdrawn) A multilayer film or sheet comprising:

a.) a first co-extruded polymeric layer consisting essentially of ionomer;
b.) a second co-extruded polymeric sheet layer consisting essentially of ethylene polar copolymer in contact with said first co-extruded polymeric layer, wherein at least one of said first or second co-extruded polymeric layers contain pigments, dyes, flakes, or mixtures thereof; and

5 c.) at least one additional third co-extruded polymeric layer in contact with said second co-extruded polymeric layer.

18. (Withdrawn) A multilayer film or sheet of Claim 17 wherein said ionomer-polyamide blend consists essentially of one or more polyamide which forms a continuous phase or co-continuous phase with one or more ionomer dispersed therein, said ionomer is present in the range from 60 to 40 weight percent and said polyamide is present in the range from 40 to 60 weight percent based on the total weight of ionomer and polyamide, said ionomer consisting essentially of a copolymer derived from ethylene and α , β -ethenically unsaturated C₃ to C₈ carboxylic acid wherein said copolymer is partially neutralized with metal ions; wherein the average acid content of copolymer prior to neutralization is present in a sufficiently high percentage such that neutralization in the range of 55 to 100 mole percent of the acid present at melt temperature with one or more metal cations increases the viscosity of the ionomer above that of the polyamide.

19. (Cancelled)

20. (Withdrawn) A multilayer film or sheet of Claim 17 or 18 wherein said first co-extruded polymeric layer contains pigments, dyes, flakes, or mixtures thereof.

21. (Withdrawn) A multilayer film or sheet of Claim 17 or 18 wherein said second co-extruded polymeric layer is selected from the group consisting of ionomer, ionomer-polyethylene blend, ionomer-polyamide blend, very low density polyethylene, ethylene polar copolymer, and blends thereof.

22-42. (Cancelled)

43. (Currently amended) An article comprising a substrate to which a multilayer film or sheet is adhered, wherein said multilayer film or sheet is the same as recited in claim 1, 3, 6, 54, 55, 57, 58, 59, 60, 61, 64, 65, 66, 67, 71, or 72.

30 44. (Cancelled)

45. (Withdrawn) An article consisting essentially of a substrate to which a multilayer film or sheet is adhered, wherein said multilayer film or sheet comprises:

a.) a first co-extruded polymeric layer consisting essentially of ionomer;

b.) a second co-extruded polymeric layer consisting essentially of very low density polyethylene in contact with said first co-extruded polymeric layer, wherein at least one of said first or second co-extruded polymeric layers contain pigments, dyes, flakes, or mixtures thereof; and

5 c.) at least one additional third co-extruded polymeric layer in contact with said second co-extruded polymeric layer.

46. (Canceled)

47. (Withdrawn) An article consisting essentially of a substrate to which a multilayer film or sheet is adhered, wherein said multilayer film or sheet comprises:

10 a.) a first co-extruded polymeric layer consisting essentially of ionomer;
b.) a second co-extruded polymeric sheet layer consisting essentially of ethylene polar copolymer in contact with said first co-extruded polymeric layer, wherein at least one of said first or second co-extruded polymeric layers contain pigments, dyes, flakes, or mixtures thereof; and

15 c.) at least one third additional co-extruded polymeric layer in contact with said second co-extruded polymeric layer.

48. (Canceled)

49. (Withdrawn) An article consisting essentially of a substrate to which a multilayer film or sheet is adhered, wherein said multilayer film or sheet comprises:

20 a.) a first co-extrusion polymeric layer consisting essentially of ionomer-polyamide blend;
b.) a second co-extruded polymeric layer in contact with said first co-extrude polymeric layer, wherein at least one of said first or second co-extruded polymeric layers contain pigments, dyes, flakes, or mixtures thereof; and
c.) at least one additional third co-extruded polymeric layer in contact with said second co-
25 extruded polymeric layer.

50-53. (Canceled)

54. (Previously presented) The multilayer film or sheet of claim 3 further comprising a third co-extruded polymeric layer in contact with said second co-extruded polymeric layer.

55. (Previously presented) The multilayer film or sheet of claim 6 further comprising a third co-extruded polymeric layer in contact with said second co-extruded polymeric layer.
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56. (Cancelled)

57. (Currently amended) The multilayer film or sheet of claim 6 wherein the thickness of the multilayer film or sheet is about 12 to about 40 mils or about 8 to about 60 mils about

400 mils.

58. (Currently amended) The multilayer film or sheet of claim 54 wherein the thickness of the multilayer film or sheet is about 12 to about 40 mils or about 8 to about 60 mils ~~about 400 mils~~.

59. (Currently amended) The multilayer film or sheet of claim 55 wherein the thickness of the multilayer film or sheet is about 12 to about 40 mils or about 8 to about 60 mils ~~about 400 mils~~.

60. (Currently amended) The multilayer film or sheet of claim 3 wherein the thickness of the first co-extruded polymeric layer is about 12 to about 40 mils ~~or about 60 mils about~~ 10 ~~400 mils~~.

61. (Currently amended) The multilayer film or sheet of claim 6 wherein the thickness of the first co-extruded polymeric layer is about 12 to about 40 mils ~~or about 60 mils about~~ 400 mils.

62. (Currently amended) The multilayer film or sheet of claim 54 wherein the thickness of the first co-extruded polymeric layer is about 12 to about 40 mils ~~or about 60 mils about~~ 400 mils.

63. (Currently amended) The multilayer film or sheet of claim 55 wherein the thickness of the first co-extruded polymeric layer is about 12 to about 40 mils ~~or about 60 mils about~~ 400 mils.

20 64. (Cancelled).

65. (Currently amended) The multilayer film or sheet of claim 59 wherein the thickness of the first co-extruded polymeric layer is about 12 to about 40 mils ~~or about 60 mils about~~ 400 mils.

66. (Currently amended) The multilayer film or sheet of claim 3 wherein the ionomer in the first co-extruded polymeric layer and the ionomer in the second co-extruded polymeric layer have flow properties that are matched to allow the ionomer in the first co-extruded layer and the ionomer ~~or ionomer polyamide blend~~ in the second co-extruded polymeric layer, when co-extruded, flow to the full width of the die.

67. (Currently amended) The multilayer film or sheet of claim 61 wherein the ionomer in the first co-extruded polymeric layer and the ionomer in the second co-extruded polymeric layer have flow properties that are matched to allow the ionomer in the first co-extruded

layer and the ionomer ~~or ionomer-polyamide blend~~ in the second co-extruded polymeric layer, when co-extruded, flow to the full width of the die.

68. (Currently amended) The multilayer film or sheet of claim 65 wherein the ionomer in the first co-extruded polymeric layer and the ionomer in the second co-extruded polymeric layer have flow properties that are matched to allow the ionomer in the first co-extruded layer and the ionomer ~~or ionomer-polyamide blend~~ in the second co-extruded polymeric layer, when co-extruded, flow to the full width of the die.

5 69. (Previously presented) The multilayer film or sheet of claim 1 wherein the first co-extruded polymeric layer has a Distinctness of Image (DOI) of at least 80 and a gloss that exceeds 60% at a 20 degree angle.

10 70. (Previously presented) The multilayer film or sheet of claim 6 wherein the first co-extruded polymeric layer has a Distinctness of Image (DOI) of at least 80 and a gloss that exceeds 60% at a 20 degree angle.

15 71. (Previously presented) The multilayer film or sheet of claim 67 wherein the first co-extruded polymeric layer has a Distinctness of Image (DOI) of at least 80 and a gloss that exceeds 60% at a 20 degree angle.

72. (Previously presented) The multilayer film or sheet of claim 68 wherein the first co-extruded polymeric layer has a Distinctness of Image (DOI) of at least 80 and a gloss that exceeds 60% at a 20 degree angle.

20 73-82. (Cancelled)

83. (Previously presented) The article of claim 43 wherein the substrate is metal, polymer, or polymer composite.

25 84. (Previously presented) The article of claim 83 wherein the substrate is metal, polymer, or polymer composite and the substrate optionally has a printed design or pattern and said multilayer film or sheet is clear.